

Chapter Five: Methodology and Approach

Identifying Species in Greatest Need of Conservation and their Habitats

Identifying the Species in Greatest Need of Conservation began with MDFW-listed species. They include all federally listed species, as well as all state-listed Endangered, Threatened, and Species of Special Concern. All of these, except for a very few already approved for deletion from the state list, have been included in the list of species in greatest need of conservation.

Any globally rare species defined and ranked by NatureServe as G1 through G3 (September, 2004) were included on the list of species in greatest need of conservation, if they were not already on the state list of Endangered, Threatened, and Special Concern species, and if they currently exist in Massachusetts.

Additional species were added which appeared on regional lists of species-of-concern, including those on the draft list of vertebrates and freshwater mussels of regional conservation concern (Therres 1999), and those that appear on the Partners in Flight (PIF) Tier I conservation priority list for Massachusetts (Rosenberg 2004). The Partners in Flight species were added only if the species breeds in Massachusetts, the breeding population consists of at least 50 pairs, and breeding in the state is long-established; or if at least 100 individuals of the species migrate through the state or winter in the state.

We also included bird species:

- with statistically significant population declines greater than 6% annually in Massachusetts (as detected by the North American Breeding Bird Survey, 1966-2003 (Sauer et al. 2004));
- if they were listed in the United States Shorebird Conservation Plan as a Species of High Concern (and for which the North Atlantic Region is extremely important during breeding, migration, or wintering);
- if they were listed in the North American Waterbird Conservation Plan as a Species of High Concern and the breeding population in Massachusetts is significant (i.e., more than 50 pairs) and/or if regionally significant wintering populations of the species occur in Massachusetts;
- At Risk Breeding Species judged by MDFW biologists to have significant breeding populations in Massachusetts (more than 50 pairs; long-established breeding in the state) and to be relatively rare and declining in abundance, distribution, or habitat; or
- game bird species judged to be declining as breeding species in the state and in need of management efforts (Species of Management Concern).

Three mammals that require very large home ranges containing a variety of habitats (Black Bear, Bobcat, and Moose) were added to the list, because of MDFW staff concerns over the effects of continued fragmentation of these species' habitats

Finally, we added the Black Racer and Sea Lamprey, because of concerns voiced during the public comment period as to their declines in range and abundance in Massachusetts.

Habitats in Greatest Need of Conservation

Organizing the number of habitat types which occur within Massachusetts into an easily understood and representative form is a daunting task. As an example, in the publication, *Classification of the Natural Communities of Massachusetts*, Swain and Kearsley identified 105 different natural communities. They included estuarine communities, but not aquatic communities. We have put forth a simpler set of habitat types (including aquatic habitat types) by combining functionally similar community types where possible, and have identified 22 habitat types that are grouped by size into three levels for the CWCS. These range from large-scale habitats (such as forested uplands) to medium-scale habitats (like grasslands) to the smallest scale (typified by vernal pool habitat) (Table 5).

Linking Species in Greatest Need of Conservation to Habitats

Each of the Habitat Summaries (Chapter 9) contains a list of species in greatest need of conservation that typically occupy the habitat type. Many species occupy several habitat types during different life stages or during various times of the year. These habitats are critically important for these species to complete their life cycles. When this is known to be the case, then these species are listed in each of these associated habitat types. When these species are known to be only occasional users of various habitat types, they are not listed in those habitat summaries. A species may be listed in more than one habitat type.

Identifying Threats/Research Needs and Associated Conservation Strategies

Threats to the species in greatest need of conservation and to the habitats where they occur have been identified in each Habitat Summary. Because of the diversity of wildlife taxa represented in the list of species for a particular habitat, these threats cover a wide range from broad descriptive threats (such as the outright loss of habitat to development or the degradation of water quality or quantity) to the negative impacts on habitats and species from simple overuse of an area by outdoor enthusiasts. It is not surprising that if the threats identified for each Habitat Summary are summarized across all habitats, the five main areas of concern that emerge for the species in greatest need of conservation and their associated habitats are the absolute loss of habitat from development; negative impacts to species and habitats from poor water quality; negative impacts to species and habitats as the result of artificial flow/ground water regulation; negative impact from invasive species; and habitat loss due to fragmentation.

Public Participation in Developing the Comprehensive Wildlife Conservation Strategy

The State Wildlife Grant Program requirement to provide a comprehensive view of how species in decline and their habitats would be protected provided the opportunity to put under the umbrella of the Massachusetts Comprehensive Wildlife Conservation Strategy all of the various MDFW programs, which had been developed somewhat independently and for other specific purposes. Therefore, when the time came to develop the CWCS, we had already received a great deal of public input into the programs and projects which when assembled would become the CWCS. This approach seems to have been effective. The comments received during the review process either agreed with the overall goals and direction of the CWCS, or offered no new alternatives. Reviewers did not have any recommendations for habitat types and only asked that two more species be added to the list of SGNC, which were added.

The increased pace of development of open-space (primarily forest land) over the past few decades has heightened the awareness of the loss of these wildlands by many conservation-minded citizens and brought the impact of this development on wildlife species into sharp focus within the Commonwealth. Thanks to publications such as *Losing Ground: At What Cost?*, published by the Massachusetts Audubon Society, there is no doubt in the mind of the public that loss of habitat to development is the primary threat to fish and wildlife resources in Massachusetts. This made writing the CWCS somewhat easier since so many people and advocates agree on the issue.

In order to stop the declines in these SGNC, this Strategy includes existing Massachusetts conservation programs, such as the far-ranging Sustainable Forestry Program that seeks to achieve the multiple goals of a sustainable harvest and the creation of habitat types for SGNC. Other efforts like the BioMap and Living Waters projects, which provide direct information to land-use decision makers regarding the locations of habitats for rare and uncommon wildlife species, could not have been created without the strong support of such groups as The Nature Conservancy, Manomet Center for Conservation Sciences, Harvard Forest, University of Massachusetts, numerous Small Research Contractors, MassGIS, Massachusetts Department of Environmental Protection, Massachusetts Executive Office of Environmental Affairs, Massachusetts Department of Environmental Management, Massachusetts Environmental Trust, and the Natural Heritage Programs from our neighboring states.

Prior to initiating the Landowner Incentive Program, which targets protection, creation, and maintenance of habitats for at-risk species on privately owned lands, MDFW held a series of presentations attended by those interested in applying for this cost-share program. Over 250 people attended these meetings. Their comments were used to help shape the final form of this program, which will spend about \$500,000 to manage habitats for at-risk species on about 2,750 acres across the Commonwealth.

Public Participation in Review of the Massachusetts CWCS

Public involvement in any MDFW policy activities, such as sport harvest regulation changes or the creation of the Comprehensive Wildlife Conservation Strategy (CWCS), must include a formal public review process and be approved by the Fish and Wildlife Board. Once the Draft CWCS was completed, it was presented to both the Fish and Wildlife Board (April 22, 2005, Belchertown, MA) and the Natural Heritage and Endangered Species Advisory Committee (May 12, 2005, Westborough, MA), at public meetings.

The members of the Massachusetts Fish and Wildlife Board include:

- George L. Darey, Chairman
Representing the Western Wildlife District, Mr. Darey of Lenox is a retired teacher who has been an environmental advocate for the Berkshires since returning from military service. Darey has a BA from the State University of New York (Plattsburg) and an MS from the University of Massachusetts. He served on the Lenox Conservation Commission as well as the Board of the Massachusetts Association of Conservation Commissions before being elected to the town Board of Selectmen.

In addition to his interest in fish and wildlife conservation, Mr. Darey serves as Board

Member of the Berkshire Natural Resource Council and Sportsmen for Land Preservation. He was a founding member of the Housatonic River Initiative, and was instrumental in forging forestland protection and management partnerships between MassWildlife and the Nature Conservancy, Ruffed Grouse Society and National Wild Turkey Federation. Mr. Darey is active in historical and cultural preservation efforts for the Berkshires and has played a major role in preserving the Edith Wharton estate and securing a permanent Berkshire home for the nonprofit Shakespeare Company. His leadership role in environmental stewardship was recognized in 1996 when he was presented a U.S. Environmental Protection Agency Award.

- John Creedon, Vice Chairman
Representing the Southeast Wildlife District, Mr. Creedon of North Easton is an attorney by profession. He received his bachelor's degree in Economics and Political Science from Boston College in 1966 and a J.D. from Suffolk University Law School in 1969. He was admitted to the bar in November of 1969.

Since 1969 Mr. Creedon has served as Assistant District Attorney for Plymouth County, as a City Councilor and as President of the City Council of Brockton. Currently he is a partner in the Brockton Law firm of Silverstein & Creedon. He is Chairman of the Committee of Management for the Old Colony YMCA and is a former Director of Old Colony Elderly Services. He serves as Chairman of the Advisory Board of Cardinal Spellman High School, his alma mater, and is president of the Horace Howard Trust. In addition to representing the southeastern part of Massachusetts, Mr. Creedon provides legal and regulatory expertise to the Fisheries and Wildlife Board.

- Michael P. Roche, Secretary
Representing the Connecticut Valley Wildlife District, Mr. Roche of Orange is a professional educator. He has been a fixture at Mahar Regional High School in Orange since 1974. He took a four-year leave of absence to work as the Regional Director for Ducks Unlimited in Massachusetts. At Mahar Regional, Mr. Roche teaches high school social science and has taught forestry and wildlife management electives in the science department in addition to coaching basketball and soccer. He serves as advisor to the Mahar Fish and Game Club, believed to be the oldest high school fish and game club in the Commonwealth and has coached teams in the Massachusetts Envirothon.

Over the past twenty years, Mr. Roche has served as a volunteer hunter education instructor, a member of Massachusetts' Project WILD advisory committee, and a staff member of the Massachusetts Junior Conservation Camp where he is currently the Director. Roche provides the Fisheries and Wildlife Board with insight on environmental education issues.

Mr. Roche is well known in the North Quabbin region as an outdoor writer, writing a weekly column in the Athol Daily News for more than fifteen years and having free-lance work published in various periodicals. He is an active member of the New England Outdoor Writer's Association and the Outdoor Writers Association of America.

- Ernest W. Foster, Jr.
Representing the Central Wildlife District, Mr. Foster of Worcester received his Bachelor of Science degree in Engineering from Norwich University. A native of Worcester County, he has since completed a number of post-graduate studies at Northeastern University, Holy Cross, Clark University and Worcester Polytechnic Institute. After serving industry for nine years, he established his own business identity in the real estate development, sales appraisals and management field; and as a general design/building contractor. His extensive experience and knowledge of business, finance, management and real estate operations as well as the unique entrepreneurial insight he contributes, have proven valuable to discussions of budgets, open space acquisition and protection, and many of the other complex issues which confront the Fisheries and Wildlife Board on a regular basis.

During his tenure with the Board, Mr. Foster has served on committees dealing with land acquisition, Wildlands Stamp Program and finance, and the development of the nonprofit Massachusetts Fish and Wildlife Conservation Endowment. He is or has been an officer, Director and/or member of the Boone and Crockett Club, Professional Hunters Association of South Africa, Safari Club International, National Rifle Association, Ducks Unlimited, Boston Safaris, Ltd., NASxSa, the FAWN Society, Worcester County Fish and Game Association, Rice Meadow Fishing Club, Boylston Sportsmen's Club, Leicester Sportsmen's Club, Lee Sportsmen's Club, Western Mass. Bird Dog Club and the Eight Point Sportsmen' Club.

Mr. Foster is an avid upland and big game hunter and fisherman having pursued his love across the continent. He is also a competitive smooth bore shooter in modern skeet and sporting clays. His knowledge of smoothbore guns can be enjoyed in his quarterly article "Classic Upland Guns", published in the Upland Almanac. Mr. Foster is the co-designer of the Contender handgun and has been credited with other firearms designs for military use.

- Joseph S. Larson, Ph.D.
As the Board's specialist in endangered species habitat, Dr. Larson of Pelham serves as the Board's liaison to MassWildlife's Natural Heritage and Endangered Species Advisory Committee, where he is a full voting member.

Dr. Larson holds B.S. and M.S. degrees from the University of Massachusetts and a Ph.D. in zoology from Virginia Polytechnic Institute. He has held research appointments with the U.S. Fish and Wildlife Service and the University of Maryland, as well as positions with state natural resource agencies and private environmental organizations in Massachusetts and Maryland. He is professor emeritus and former Chairman of the Department of Forestry and Wildlife Management and Director of The Environmental Institute at the University of Massachusetts at Amherst and is professionally registered or certified in forestry, ecology, wetland science and wildlife biology.

Nationally, Dr. Larson has been involved as Executive Chairman of the National Wetlands Technical Council and Chairman of the U.S. National Ramsar Committee that represents non-governmental interests to the Ramsar Convention on Wetlands of International Importance. He received the national Chevron Conservation Award in 1990. Internationally,

he has been a member of diplomatic delegations to the Ramsar Convention and has lectured and conducted wetlands training seminars in India, China and Europe. He is a member of the Commission on Ecosystem Management of the World Conservation Union.

In Massachusetts, Dr. Larson has served on the Board of Directors of the Massachusetts Association of Conservation Commissions and as a member of the Board of Directors of the Massachusetts Audubon Society, where he chaired the first science advisory committee. He drafted original legislation to define wetlands in the Commonwealth and has served on all of the wetland regulation advisory committees convened by the Department of Environmental Protection. He was a member of the Secretary's Fisheries and Wildlife Advisory Committee during the original establishment of the Executive Office of Environmental Affairs. In 1997 the Massachusetts Wildlife Federation honored Dr. Larson as Conservationist of the Year.

- Brandi L. Van Roo, Ph. D.

Dr. Van Roo is an Assistant Professor in the Biology Department at Framingham State College (FSC) and is the Board's professional wildlife biologist

Originally from Rochester, NY, Dr. Van Roo obtained a B.S. in Environmental and Forest Biology from the State University of New York (SUNY) College of Environmental Science and Forestry and earned a Ph. D. in Behavioral Ecology from Indiana University in Bloomington, IN.

Dr. Van Roo is a resident of Douglas and an associate member of the Douglas Conservation Commission. Dr. Van Roo conducts field research on breeding behaviors in migratory songbirds in the Blackstone region. She teaches upper division courses in Wildlife Biology, Ornithology and Ecology at FSC and is the faculty advisor for the FSC Student Chapter of The Wildlife Society. Dr. Van Roo was appointed to the Fisheries and Wildlife Board in 2005.

- Frederic Winthrop

Mr. Winthrop represents both the Northeast Wildlife District of Massachusetts and agricultural interests on the Fisheries and Wildlife Board. He is co-owner and operator of the family farm in Ipswich and is experienced in wildlife management and land preservation issues.

Prior to his appointment to the Fisheries and Wildlife Board, he served 15 years as the Executive Director of The Trustees of Reservations, the nation's oldest land trust organization, which preserves and manages places of historic and ecological significance in Massachusetts. Mr. Winthrop currently serves on committees for the Massachusetts Audubon Society, the Wildlife Conservation Society, the Essex National Heritage Commission, and is a Trustee of the Essex Agricultural and Technical Institute. He has also been Chairman of the Ipswich Conservation Commission, Director of the Ipswich River Watershed Association and a Trustee of the North American Wildlife Foundation.

Mr. Winthrop served as Massachusetts' Commissioner of Food and Agriculture from 1975-1985 and has received wide recognition for his contributions to agriculture. He was awarded

the New England Agricultural Adventurers Award for initiating the Agricultural Preservation Restriction Program, the first such statewide program in the country. He has received the Soil Conservation Society of America Award for "Significant Contributions and Achievements in Land and Water Conservation", the Massachusetts Tree Farmer of the Year award and the Distinguished Service Award from the Future Farmers of America. He was elected President of both the National and Northeast Associations of State Departments of Agriculture, President of the Eastern US Food and Agricultural Export Council and Chairman of the American Farmland Trust. He has led agricultural delegations to China, Poland and Romania.

Mr. Winthrop is a graduate of Harvard University and served in the U.S. Marine Corps Reserve.

The regular members of the Massachusetts Natural Heritage and Endangered Species Committee include:

- Kathleen S. Anderson, of Middleborough, is currently the chairperson of the Committee. She was founding director of the Manomet Bird Observatory and a founder and first President of the Plymouth County Wildlands Trust (now the Wildlands Trust of Southeastern Massachusetts). For eleven years she was ornithologist at the Encephalitis Field Station, U.S. Public Health Service, in southeastern Massachusetts. She has been a 20 –year member of the Policy Council of the American Bird Conservancy (formerly the U.S. Section of the International Council for Bird Preservation), serving as Secretary for fifteen years. Mrs. Anderson has had a lifelong commitment to the study and protection of birds, land preservation and the conservation of natural resources.
- Marilyn J. Flor, of Rockport, retired from the Massachusetts Audubon Society after 37 years. She taught Audubon's Natural History Program in elementary schools in Essex and Berkshire County for many years. At Audubon's Berkshire Sanctuaries she was Resident Naturalist, developing and leading programs, editing the newsletter and directing the Pleasant Valley Sanctuary day camp. She served on and chaired the Lenox Conservation Commission and continues to have an interest in land preservation. Ms. Flor is a naturalist with a special interest in amphibians, reptiles and vernal pools. She has served on the Committee since 1981 and as its Secretary from 1986 to 1999.
- Joseph S. Larson, Ph.D., of Pelham, is Professor Emeritus at the University of Massachusetts, Amherst, where he served as Director of The Environmental Institute and Chairman of the Department of Natural Resources Conservation. A member of the state Fisheries and Wildlife Board, he has particular expertise in beaver behavior, and the ecological functions and endangered species habitat of freshwater wetlands. He has served as a wetland science and policy advisor to local, state, national and international agencies, has held registration as a forester in Maine and Maryland, and holds professional certification as a Senior Ecologist, Wildlife Biologist and Wetland Scientist.
- Mark Mello, of New Bedford, is Research Director at the Lloyd Center for Environmental Studies in South Dartmouth, MA. He holds an MS degree in Zoology and his particular

expertise is insects, especially butterflies and moths (Lepidoptera), and estuarine and freshwater ecology.

- Stephen M. Meyer, Ph.D., of Sudbury, is a Professor of Political Science at the Massachusetts Institute of Technology where he teaches environmental policy. A naturalist with a special interest in reptile and amphibian conservation, he has served as a member of the Sudbury Conservation Commission for eight years.
- Thomas J. Rawinski, of Oakham, has the title of Botanist with the U. S. Forest Service in Durham, NH. He is involved primarily with invasive plant issues throughout New England and New York. Tom received an M. S. in wildlife science from Cornell University. He has worked as an ecologist for the Massachusetts Audubon Society, the Virginia Department of Conservation and Recreation, and the Nature Conservancy. His particular expertise is plant ecology and botany, with extensive training and experience in ecological research. In 2001 Tom was the recipient of the Conservation Award from the New England Wildflower Society.
- Jonathan A. Shaw, of Sandwich, has been involved for over 20 years in the conservation of rare and endangered plants through protection in the wild, seed banking and other techniques and public education. He has served as Executive Director, New England Wild Flower Society; President, Bok Tower Gardens; Trustee, National Center for Plant Conservation; and Trustee and Treasurer, American Association of Botanical Gardens and Arboreta.

The associate members of the Massachusetts Natural Heritage and Endangered Species Committee include:

- William Brumback, of Acton, is the Conservation Director of the New England Wild Flower Society and oversees the Society's plant conservation programs. These programs currently include the New England Plant Conservation Program (NEPCoP), a regional voluntary collaborative of 150 collaborators, mostly professional in all six New England states, and the Plant Conservation Volunteer Corps (over 400 trained amateurs monitoring rare plants and invasive species throughout New England). Bill published with other authors, "Flora Conservanda: New England, The NEPCoP List of plants in need of conservation", which provides the status of over 500 plants that are of conservation concern in New England.
- Brian Cassie, of Foxboro, is a member of the Board of Directors of the North American Butterfly Association and former President of the Nuttall Ornithological Club. He has authored or co-authored 12 natural history books. His research activities include bird and insect migration, New England butterflies, and Massachusetts' marine mollusks.
- Timothy Flanagan, of Lenox, is a Professor of Environmental and Life Sciences at Berkshire Community College in Pittsfield, Massachusetts. His professional interests include landscape ecology, geomorphology, and biodiversity studies. He also maintains a private practice in environmental consulting doing wetlands delineation and biological inventories for the protection of natural areas. He has previously worked as the Science curator at the Berkshire Museum and as a Project Director for the Massachusetts Audubon Society.

- Glenn Motzkin, of Shutesbury, is a Plant Ecologist at the Harvard Forest, Harvard University, an Ecology Advisor to the Trustees of Reservations and a member of the Science Advisory Committee of the Connecticut River Watershed Council. He has worked as a private consultant in community ecology and has participated in development of a statewide vision for Massachusetts' forests. His research has focused on forested bogs, uncommon plant communities, and the relationships between land use history and current vegetation in New England.
- Blair Nikula, of Harwich Port, is an expert on dragonflies and damselflies (odonates), co-edits the Internet newsletter Ode News, and is co-authoring a beginner's guide to odonates. He has also been an active birder for nearly 40 years, is a Past-President of the Cape Cod Bird Club, served for fifteen years as a regional editor of American Birds, and has co-authored many articles on birds. He is an accomplished photographer, with photo credits in over a dozen natural history books and numerous magazines.
- Wayne R. Petersen, of Hanson, is Field Ornithologist at the Massachusetts Audubon Society. He is a New England Regional Editor for North American Birds magazine and the American Birds Christmas Count, and serves on the board of Bird Observer magazine and The New England Naturalist. A former 18 year middle school life science teacher, he gives workshops, lectures widely and leads international birding tours. He is author of the "National Audubon Society Pocket Guide to Songbirds and Familiar Backyard Birds" and co-author of "Birds of Massachusetts" and the "Massachusetts Breeding Bird Atlas" (in preparation).
- Mark Pokras, D.V.M., of Westborough, is Director of the Wildlife Clinic at the Tufts University School of Veterinary Medicine in North Grafton. Born and educated through grammar school in the U.S., he attended junior and senior high school in Mexico and Venezuela. After college he worked in ornithology and estuarine biology before attending veterinary school. His particular expertise is wildlife medicine. He is a co-founder of the Center for Conservation Medicine at Tufts and is a founding member of the International Association of Wildlife Veterinarians. He is nationally known for his work in wildlife rehabilitation and his research on the health of the Common Loon.

A special presentation was also provided to the Massachusetts Teaming with Wildlife Committee (May 16, 2005, Westborough, MA). The 35 members of this committee include representatives of the following groups and businesses:

- Association for the Preservation of Cape Cod
- Bristol County Nature Center
- Clare Walker Leslie, Wildlife Illustrator
- Call of the Wild, Inc.
- Cape Cod Bird Club
- Creative Variety Products and Gifts
- Creativity Plus
- Crow's Nest
- Don & Lillian Stokes, Nature Authors
- Eight Point Sportsmen's Club
- Facts About Wildlife & Nature Society

- Forbush Bird Club
- Gun Owners' Action League, Inc.
- Hyannis Whale Watcher Cruises
- Manomet Center for Conservation Sciences
- Massachusetts Sportsmen's Council
- Massachusetts Wildlife Federation
- Massachusetts Audubon Society
- Nashoba Valley Hunt
- National Wild Turkey Federation (Mass. Chapter)
- National Wild Turkey Federation (Central Mass. Chapter)
- New England Wild Flower Society
- National Grid
- Massachusetts Natural Heritage and Endangered Species Advisory Committee
- Nuttall Ornithological Club
- South Shore Bird Club
- South Shore Natural Science Center
- Swift Instruments, Inc.
- School for Field Studies
- Toads R Us
- Thorton Burgess Society
- Walden Woods Project/Thoreau Institute
- The Wildlife Society Student Chapter/UMASS
- WILD Again, Inc.
- Wildlife Rehabilitator's Association of Massachusetts, Inc.

In addition to these presentations, a formal informational meeting, advertised in 18 newspapers, was held by the Fisheries & Wildlife Board on August 25, 2005, in Wareham, MA, as part of the regular monthly meeting, soliciting additional public comments prior to the finalization of the CWCS.

The Draft CWCS was posted for six weeks on the MDFW web home page beginning on May 20, 2005. Prior to this posting, MDFW sent out an email announcement of the Draft CWCS to 2758 email addresses, as part of our regular email newsletter. In the release, we stated that the Draft CWCS was ready for public comment, that it would be posted on our home page, and that we were soliciting public comment. The announcement of the Draft was sent to 256 media outlets, 71 Sportsman's Clubs, 47 conservation-related organizations, 37 outdoor businesses, 23 watershed organizations/members, 23 Trout Unlimited members/Chapters, 18 municipal officials, 14 land trusts, 11 Federal entities, nine colleges, five Conservation Commissions, and many other private individuals and businesses. Additionally, 80 announcements of the Draft CWCS were faxed out and 1500 were mailed to various interested parties.

Website visits to the Draft CWCS totaled 668. Visits to each section of the Draft were tracked separately, with results as follows:

- Bird Species Summaries – 409 visits;
- Wildlife Section Structure - 396 visits;

- Reptile Species Summaries - 371 visits;
- Issues Affecting Biodiversity – 358 visits;
- Connecticut and Merrimack River Habitat Summary - 331 visits;
- Mammal Species Summaries – 277 visits;
- Beetle Species Summaries - 231 visits;
- History of Landuse - 225 visits;
- Natural Heritage and Endangered Species - 190 visits; and
- Executive Summary - 186 visits.

We received twelve written comments from this public review of the Draft CWCS. They came from private individuals, a watershed association, local chapters of national nongovernmental conservation organizations, and statewide conservation organizations. We received requests to add two species (Black Racer and Sea Lamprey) to our list that were not already on the list of species in greatest need of conservation. Several of the other comments were simply supportive statements rather than comments on the Draft CWCS.

All comments were reviewed and the Draft amended accordingly. After amending the Draft CWCS, we again announced that the CWCS was posted (August 9, 2005) on our website and announced that we would hold an informational meeting to explain the CWCS at the August 25th, 2005, Fish and Wildlife Board meeting in Wareham, MA. No additional written or oral comments were received at the meeting.

Agency Participation in the CWCS Process

On July 28, 2006, a letter of invitation was sent from the Director of the Division of Fisheries and Wildlife to all Federal, State, local and Tribal entities that manage significant land and water areas of the state or administer programs that significantly affect the species or habitats described in the CWCS. This invitation requested the invitee to review and comment on the CWCS, paying particular attention to the new Monitoring Chapter of the CWCS, and to attend a meeting at DFW Field Headquarters in Westborough, Massachusetts, to hear an overview presentation of the CWCS and to solicit stakeholder input in a face-to-face venue. Along with the invitation, a CD copy of the CWCS was enclosed. Comments on the CWCS were accepted in writing via mail or email through September 15, 2006, as well as in person at the August 31, 2006 meeting, but also could be provided until September 15, 2006. Those invited are listed below.

Title	Agency	Address	Municipality
Manager	Cape Cod National Seashore	99 Marconi Station Site Road	Wellfleet, MA 02667
Region Director	National Marine Fisheries Service	One Blackburn Drive	Gloucester, MA 01930-2298
Mr. Glen Marshal	Mashpee Wampanog Tribal Council	P.O. Box 1048	Mashpee, MA, 02649
Executive Director	MACC	10 Juniper Road	Belmont, MA 02478
Mr. Cecil Currin	State Conservationist, USDA- NRCS	451 West Street	Amherst, MA 01002
Mr. Doug Gillespie	Commissioner, Department of Agricultural Resources	251 Causeway Street, Suite 500	Boston, MA 02114- 2151

Title	Agency	Address	Municipality
Mr. Steve Burrington	Commissioner, Dept. Cons. and Recreation	251 Causeway Street, Suite 600	Boston, MA 02114-2104
Mr. Robert Golledge Jr.	Commissioner, Dept. of Env. Protection	One Winter Street	Boston, MA 02108
Mr. Paul Diodati	Director, Division of Marine Fisheries	251 Causeway Street, Suite 400	Boston, MA 02114-2152
Base Commander	Massachusetts National Guard Headquarters	50 Maple Street	Milford, MA 01757-3604
Wompanoag Tribe	20 Black Brook Road		Aquinnah, MA 02535-1546
Brig. Gen. Wade Ferris	439 AW/CC	100 Lloyd Street, Suite 100 Westover ARB	Chicopee, MA 01022
Ms. Libby Herland	Refuge Manager, Eastern Mass. NWR Complex	73 Weir Hill Rd	Sudbury, MA 01776
Mr. Andrew French	Refuge Mgr. S.O. Conte Nat. Fish and Wildl. Refuge	52 Avenue A	Turners Falls, MA 01376
Mr. Graham Taylor	Refuge Mgr. Parker River Nat. Fish and Wild. Ref.	6 Plum Island Turnpike	Newburyport, MA 01950
Ms. Jan Rowan	Ct. River Coordinator, Fisheries Program	103 East Plumtree Rd	Sunderland, MA 01375
Mr. Joe McKeon	Central New England Fish. Res. Complex	151 Broad Street	Nashua, NH 03063
Mr. Mike Bartlett	New England Field Office Ecological Services	70 Commercial Street, Suite 300	Concord, NH 03301
Mr. Andrew Milliken	U.S. Fish and Wildlife Service Div. Mig. Birds	Habitat Conservation Branch 300 Westgate Center Drive	Hadley, MA 01035
Ms Sherry Morgan	Ass. Reg. Dir. Mig. Bird and St. Prgm. Hadley, MA	U.S.Fish and Wildlife Service 300 Westgate Center Drive	Hadley, MA 01035
Mr. John Organ	Div. Chief, Federal Assistance, Hadley, MA	U.S.Fish and Wildlife Service 300 Westgate Center Drive	Hadley, MA 01035

Those who attended the August 31, 2006 meeting are listed below.

Name	Affiliation	Email address
Michael Amaral	USFWS Concord, NH	michael_amaral@fws.gov
Megan Amundson	Environmental League of MA	mamundson@environmentalleague.org
Jed Brown	USFWS Nashua, NH	jed_brown@fws.gov
Kim Damon-Randall	NMFS Northeast Region	kimberly.damon-randall@noaa.gov
Lori Erb	NHESP, DFW, MA	lori.erb@state.ma.us
Beth Goettel	USFWS Silvio Conte NWR	beth_goettel@fws.gov
Lynn Harper	NHESP, DFW, MA	lynn.harper@state.ma.us
Dana Hartley	NMFS Northeast Region	dana.hartley@noaa.gov
Stephanie Koch	USFWS Eastern MA NWR	stephanie_koch@fws.gov
Ken MacKenzie	Mass Wildlife	ken.mackenzie@state.ma.us
Dee Mazzaresse	USFWS Hadley, MA	dee_mazzaresse@fws.gov
Andrew Milliken	USFWS Atl. Coast J.V.	andrew_milliken@fws.gov
Sherry Morgan	USFWS Hadley, MA	sherry_morgan@fws.gov
Graham Taylor	USFWS Parker River NWR	graham_taylor@fws.gov
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Several comments were provided by some of the agencies (National Marine Fisheries Service [NMFS], U. S. Fish and Wildlife Service [USFWS], and the Massachusetts Office of Coastal Zone Management [CZM]) and their comments were incorporated into the CWCS, where appropriate. The comments from NMFS addressed Atlantic Sturgeon, Blueback Herring, Alewife, and American Eel. These comments were taken in their entirety and changes were made in Chapter 10, pages, 367, 376, 377, and 379. The USFWS requested that Sea Lamprey be added to the list of SGNC. That addition was made (see pages 106 and 390). The comments provided by CZM in a seven-page letter were added into the text of the CWCS in Chapters 3, 7, and 9, including requests to add information on existing invasive species monitoring and management programs, new efforts to build information databases on marine habitats and species, coastal and wetland habitat restoration programs, monitoring surveys for marine, coastal, lake, and wetlands habitats and species, specific threats to marine and estuarine habitats, and identifying and prioritizing salt marsh restoration efforts, among others. Comments from these agencies were added to several sections of the CWCS, where appropriate.

Public input to the CWCS did not begin with posting the Draft CWCS on the web nor will it end when the CWCS is approved. Rather, it remains an on-going and continuous effort in each and every program and project described within the CWCS. For these reasons, we believe that the CWCS is in fact the embodiment of what Congress intended when they required that public participation be part of this effort.

Implementing the CWCS

There is a role to play in implementing the strategies described in the Comprehensive Wildlife Conservation Strategy for every conservation-minded citizen, citizens group, landowner, state resource agency and federal resource agency involved in Massachusetts. Indeed, it is not the intent, nor the expectation, that any one entity alone will implement the CWCS. The CWCS provides a framework for the conservation of not only those species we recognize as being rare but importantly, those species that many of us would otherwise think of as common but which may actually already be in decline. By providing this framework, where these species and the habitats which they depend on for their existence are listed, the threats to those species and their habitat identified and an outline of actions to meet those threats, we all are provided an opportunity to participate in reversing their decline, which would not have been possible without the State Wildlife Grant Program and the CWCS.

Efforts like BioMap and Living Waters, which are described at length in the CWCS, are integral to protecting the biodiversity of the Commonwealth. They were developed to empower land-use decision makers at every level by providing information that identifies where important wildlife habitats exist throughout the state. Armed with this information non-profit land trusts are able to identify important habitats in the area of the state in which they operate. Land developers are able to identify areas of important wildlife value and tailor their project proposals for speedier regulatory approval and State and Federal resource agencies are able to focus land management cost-share grant programs toward Core Habitats and Supporting Natural Landscape.

Other implementation strategies include cost-share programs like the state Landowner Incentive Program (LIP). This program partners with private landowners to manage their property to create or maintain habitat for at-risk species. Applications are ranked on factors such as whether or not

the site is in BioMap Core Habitat or Supporting Natural Landscape and whether the site is protected from development and to what degree.

Massachusetts has no National Forests or other large federal land holdings, unlike many of the western states or even some of the other New England states. However, coordination with our federal partners to protect, manage and restore species in greatest need of conservation is important. The Natural Resources Conservation Service arm of the U.S. Department of Agriculture is using BioMap as a ranking criterion for their Wildlife Habitat Incentive Program (WHIP). Both the state and the federal fish and wildlife agencies jointly administer Anadromous Fish Restoration in the Connecticut River. Because of the extensive shoreline in Massachusetts and the important habitats that are along the ocean shoreline for many species of concern, Massachusetts is an important partner to the migratory bird initiatives with both federal and state partners from around the region.

Trained volunteers give their time in many ways to support activities that help to promote the goals of the CWCS. These efforts include assisting in the Migratory Fish Restoration Program. Volunteers provide the majority of the labor to stock Atlantic salmon fry for restoration purposes. They also help to staff fishways, where returning salmon are collecting for breeding purposes. Volunteers across the state provide primary information to the Natural Heritage and Endangered Species Program through vernal pool certification, monitoring of rare bird nesting sites, and providing data on endangered species element occurrences.

While the public at large and volunteers have important roles to play in implementing the CWCS, many of the conservation strategies identified in the CWCS will have to be implemented by MDFW and the resource agencies. Maintaining and updating the informational database of statelisted species, by the NHESP at MDFW, is a critical element necessary to understanding population trends. Likewise, collecting and analyzing population information from other fish and wildlife species on the list of species in greatest need of conservation by MDFW is a key element to understanding larger trends in habitat loss throughout the Commonwealth.

Regulatory review of development projects by MDFW staff is a largely unsung activity which may go unnoticed by many, but which is critical to the SGNC. The Massachusetts Endangered Species Act requires that projects that are proposed in areas where state-listed species occur must be reviewed by the NHESP, so that the impacts from those projects are minimized or mitigated to the greatest extent possible. Development projects such pipeline stream crossings and bridge repairs and upgrades are also reviewed by MDFW staff to provide technical input on fish and wildlife resources for the agencies which have regulatory authority over the project. Hydroelectric licensing and re-licensing projects are reviewed in detail for endangered species and other fish and wildlife concerns. In a great leap forward, instream flow requirements at these projects are now required under the states' water quality standards thus protecting additional species identified as species in greatest need of conservation.

Habitat acquisition for wildlife purposes across the state by MDFW and others is guided by the recommendations from both the BioMap and Living Waters projects. This information is critical for those interested in protecting land from development, either through acquisition or other forms of protection. Within MDFW, our Land Acquisition Program will be used to implement

the CWCS through fee acquisition of habitat using SWG funds along with environmental bond monies and funds collected from the sale of the State Wildlands Stamp.

MDFW works with other Massachusetts resource agencies to implement the CWCS. Massachusetts was the first state in the country to be “green certified” by the Forestry Council. This certification requires that all state forestland, regardless of the agency which controls the property, manage their lands in such a way as to provide benefits for both human and wildlife purposes in a sustainable way over the long-term. Staff from MDFW also sits on many state natural resource committees and boards including the Water Resources Commission (WRC). The WRC helps to set water use policy for the Commonwealth which has direct impact on many of the habitats and species identified in the CWCS.

References

Rosenberg, K. V. 2004. Partners in Flight Continental Priorities and Objectives Defined at the State and Bird Conservation Region Levels: Massachusetts. Cornell Lab of Ornithology, Ithaca, New York.

Sauer, J. R., J. E. Hines, and J. Fallon. 2004. The North American Breeding Bird Survey, Results and Analysis 1966 - 2003. Version 2004.1. USGS Patuxent Wildlife Research Center, Laurel, Maryland.

Swain, P. C., and J. B. Kearsley. 2000. Classification of the Natural Communities of Massachusetts: Draft. Massachusetts Natural Heritage & Endangered Species Program, Westborough, MA.

Therres, G. D. 1999. Wildlife species of regional conservation concern in the northeastern United States. *Northeast Wildlife* 54:93-100.